

Cummulative Index 2004

Volume 30

February	IMMUNOLOGY FOR THE RHEUMATOLOGIST, pages 1–236
May	NEW AND EMERGING THERAPIES FOR RHEUMATOID ARTHRITIS, pages 237–440
August	APOPTOSIS IN THE RHEUMATIC DISEASES, pages 441–684
November	OUTCOMES RESEARCH IN RHEUMATOLOGY, pages 685–921

Note: Page numbers of article titles are in **boldface** type.

A

A box domain, of HMGB1, for arthritis, 632

Acetaminophen, for osteoarthritis, 705–706

Adalimumab, for rheumatoid arthritis,

347–362

carcinogenic potential of, 360

disability effects of, 353–354

dosing of, 348

durability of response to, 355–356

early versus late, 356

efficacy of, 349

immunosuppressive effects of, 360

in breastfeeding, 360

in elderly persons, 359

in pregnancy, 359

methotrexate with, 349–350, 352,

355–357, 359

pharmacokinetics of, 347–348

pharmacology of, 347

precautions with, 359

quality of life impact of, 353–354

safety of, 242–252, 356–359

signs and symptom effects of, 349,

351–353

structural damage inhibition by, 354

tuberculosis risk from, 261–262

Adenosine triphosphate, in apoptosis

regulation, 509

Adhesion molecules, endothelial cell

interactions with, 99–103, 107–108

Alcohol intake, uric acid levels and, 692

Alendronate, safety of, 842–843

American College of Rheumatology, data set
of, for rheumatoid arthritis assessment,
741–743

American Rheumatism Association
joint count system of, 726–728
Medical Information System of,
770–771, 880

Amyloid, serum, in apoptotic cell clearance,
476, 532

Anakinra, for rheumatoid arthritis, **363–378**
as monotherapy, 365–366, 369
efficacy of, 365–368
etanercept with, 316–317, 373–374
methotrexate with, 366–367, 369–370
multiple disease-modifying antirheumatic
drugs with, 370–372
previous tumor necrosis treatment with,
374–375
production of, 364–365
radiologic evaluation of, 289, 372–373
safety of, 242–252, 369–372
tuberculosis risk from, 256

Anaphylotoxin, complement-derived, 4–5

Anemia, aplastic, from cytokine inhibitors, for
rheumatoid arthritis, 247

Anergy

B lymphocyte function in, 163

T lymphocyte function in, 151–152

- Angiogenesis**
 endothelium role in
 clinical perspectives of, 107-108
 pathophysiology of, 104-107
 in rheumatoid arthritis, 44-45
 inhibitors of, 106-107
- Angioneurotic edema, hereditary, complement deficiencies in, 9**
- Ankylosing spondylitis**
 cytokines in, 46
 etanercept for, 320-321
 familial aggregation of, 214
 medical record data on, in Rochester Epidemiology Project, 821, 830
- Annexin I, lipoxin interactions with, 88**
- Antibody(ies), high-mobility group box chromosomal protein 1, for arthritis, 632**
- Anti-Fas, in apoptosis induction, 577-579**
- Antigen-presenting cells**
 B lymphocytes as, 168
 costimulatory molecule interaction with, 177-181
 in T-lymphocyte activation, 143-145
 T lymphocytes as, 136-138
- Antineutrophil cytoplasmic antibodies, in apoptosis, in kidney, 669**
- Antinucleosome antibodies, in systemic lupus erythematosus, 537-546**
- Antiphospholipid antibodies**
 in apoptosis, 198
 treatment of, 11-12
- Antitumor Necrosis Factor Trial in Rheumatoid Arthritis with Concomitant Therapy (ATTRACT), 334-338, 704, 711**
- Aplastic anemia, from cytokine inhibitors, for rheumatoid arthritis, 247**
- Apoptosis, 193-212**
 autoantigen structure alteration during, 455-471
 autoantigens in
 biochemical alterations to, 197-198
 description of, 193-195
 redistribution during, 196
 surface changes in, 198-199
 autoimmunity and, 557-572
 beneficial effects of, 507
 cells in
 autoimmunity and, 204-206
 autoreactive T lymphocytes, 152
 clearance of, 202-206
 immune ignorance of, 202-203
 peripheral tolerance of, 203-204
 recognition of, 199-202
 clearance in, 473-485
 amyloid in, 476
 autoimmunity induction in, 474-475
 CD31 in, 479
 collectins in, 479
 complement in, 475-476, 481
 C-reactive protein in, 476
 DNA degradation in, 480
 environmental effects in, 480
 in systemic lupus erythematosus, 481-482, 495-499, 531-533
 manipulation of, for disease treatments, 482
 mannose-binding lectin in, 479
 Mer protein in, 477-478
 normal mechanisms in, 488-493
 phagocytosis triggers in, 474
 pharmacologic effects on, 480
 phosphatidylserine in, 476-477
 receptors in, 474, 479-481
 surfactant proteins in, 479
 transforming growth factor- β in, 478
 transglutaminase 2 in, 478
 complement in, 7-8
 definition of, 507, 603
 essential nature of, 603
 in congenital heart block, 587-600
 in glomerulonephritis, 653-674
 in osteoarthritis, 637-651
 in rheumatoid arthritis, 601-623, 625-635
 in systemic lupus erythematosus. *See* Systemic lupus erythematosus, apoptosis in.
 mechanisms of, 441-454
 Bcl-2 family in, 446-451
 caspases in, 443-445
 DNases in, 445-446
 endoplasmic reticulum role in, 450-451
 extrinsic signaling through death receptors, 447-448, 488-491, 589-590
 intrinsic death pathways in, 448-450, 589-590
 phagocytosis after, 25
 resistance to, in rheumatoid arthritis, therapy based on, 607-617
 T-cell receptor signaling and, 145-146
 Toll-like receptor stimulation and, 557-572
 versus necrosis, 638
- Apoptosis-inducing factor/endonuclease G, 445**
- Apoptosomes, 448**

- Arachidonic acid, lipoxin formation from, 71-75
- Arteritis, giant cell, 54-55, 821, 825
- Arthritis
- carcinomatous, versus rheumatoid arthritis, 276-277
 - collagen-induced, treatment of, 12
 - degenerative. *See* Osteoarthritis.
 - high-mobility group box chromosomal protein 1 in, 630-632
 - in cancer, versus rheumatoid arthritis, 279-281
 - in paraneoplastic syndromes, versus rheumatoid arthritis, 276-279
 - psoriatic. *See* Psoriatic arthritis.
 - reactive, cytokines in, 46
 - rheumatoid. *See* Rheumatoid arthritis.
- Arthritis, Rheumatism and Aging Medical Information System (American Rheumatism Association Medical Information System), 770-771, 880
- Arthritis Impact Measurement Scale, 730, 737, 883-884
- Aspartic acid-specific apoptotic proteases, in autoantigen cleavage, 460-461
- Aspirin, safety of, 839, 841
- in pregnancy, 842
- Aspirin-triggered lipoxins
- actions of, 73-75, 79-81
 - agonists of, 75
 - formation of, in disease, 78
 - in proinflammatory gene expression, 86-87
 - overview of, 68-71
 - receptors for, 83-87
 - therapies related to, 87-90
- ATTRACT (Antitumor Necrosis Factor Trial in RA with Concomitant Therapy), 334-338, 704, 711
- Auranofin, for rheumatoid arthritis, 713
- Autoacids, in inflammation resolution. *See* Inflammation, resolution of, endogenous small molecules for.
- Autoantigens
- distribution of, autoimmune disease nature and, 220-221
 - in apoptosis
 - biochemical alterations to, 197-198
 - description of, 193-195
 - redistribution during, 196
 - structural alterations in, 455-471
 - aspartic acid-specific protease cleavage in, 460-461
 - crypticity in, 456-460
 - cytotoxic lymphocyte granule-induced death and, 461-464
 - dominance in, 456-458
 - granzyme B-induced cleavage in, 464, 533
 - phenotype-specific, 464-465
 - postranslational, 465-466, 533
 - tolerance induction in, 456
 - surface changes in, 198-199
- Autodigestion, in apoptosis, in osteoarthritis, 646
- Autoimmune disease
- apoptosis dysregulation in, 204-206
 - B lymphocytes in, 167-168
 - classification of, versus major histocompatibility class, 221-222
 - complement and, 7-9, 11-13
 - dendritic cell cross-priming in, 125-127
 - genetics of, 213-227
 - familial aggregation, 213-215
 - low penetrance rates, 215-216
 - major histocompatibility genes in, 216-224
 - allele association in, 222-224
 - disease classification based on, 221-222
 - importance of, 217-218
 - physiologic response and, 218-220
 - target autoantigen distribution and, 220-221
 - T-lymphocyte repertoire in, 224-227
 - twin concordance, 215
 - in rheumatoid arthritis therapy, 249-251, 340-341
 - T lymphocytes in, 149-153
 - treatment of, B lymphocyte considerations in, 169-170
- Autoimmunity
- DNase and, 480
 - in apoptosis, 474-475
 - antigen structural alterations in, 455-471
 - in clearance alterations, 497-499
 - Toll-like receptors and, 557-572
- Autophagy, in apoptosis, in osteoarthritis, 645-646
- Azathioprine, safety of, in pregnancy, 841
- B**
- B23 autoantigen, structural alterations of, in apoptosis, 464-465
- B lymphocytes, 159-174
- activation of, 164-165
 - regulation of, 165-167

- anergic, 163
 - as antigen-presenting cells, 177
 - autoimmunity and, 49-50, 167-170
 - depletion of, for rheumatoid arthritis treatment, **391-401**
 - aim of, 391-393
 - immunodynamic studies of, 399-400
 - immunosuppression evidence in, 396-397
 - infusion reactions from, 397-398
 - justification for, 396
 - length of benefit of, 396
 - malignancy in, 398
 - mechanics of, 393-394
 - practical experience with, 394
 - protocols for, 394-395
 - seronegative, resistance of, 395
 - follicular, 165
 - immunoglobulins produced by, 160-162
 - in systemic lupus erythematosus development, 498, 516-517, 519-521
 - marginal zone, 164-165
 - memory, 165
 - rheumatoid factor produced by,
 - chromatin-containing immune complexes in, 560-564
 - selection of, 163-164
 - subsets of, 164-165
 - therapeutics and, 169-170
 - tolerance in, 162-164
- B7 molecules, action of, 177-178, 181-182
- Bacterial DNA, immunogenic effects of, 558
- Bad protein, in apoptosis, 447, 450
- Bak proteins, in apoptosis, 446-451, 603
- Bax proteins, in apoptosis, 446-451, 603
- B-cell activating factor
 - in B-lymphocyte activation, 166-167
 - in systemic lupus erythematosus, 50
- B-cell receptor and B-cell receptor complex, 136, 163-166
- B-cell stimulatory/differentiating factor. *See* Interleukin-6.
- Bcl-2 proteins, in apoptosis, 446-451
 - in rheumatoid arthritis, 602-603, 615-616
 - in systemic lupus erythematosus, 529
- B-E8 monoclonal antibody, for rheumatoid arthritis, 408-410
- Behcet's disease, cytokines in, 56
- BH3-only proteins, in apoptosis, 447, 449-450
- Bias
 - in pharmacoepidemiology, 837-838
 - minimization of, in Rochester Epidemiology Project, 827-829
- Bid protein, in apoptosis, 447
 - autoantigen structural alterations and, 462
 - in rheumatoid arthritis, 603
- Bim protein, in apoptosis, 447, 450
- Binding proteins, interleukin-18, 421-424
- Black Women's Health Study, 800, 807
- Bleeding, gastrointestinal,
 - NSAID-induced, 839
- Blood vessels, endothelium of. *See* Endothelial cells, vascular.
- Bok proteins, in apoptosis, 446-450
- Bone marrow, apoptotic cell clearance in, 512
- Bone mineral density reference values, in NHANES, 875
- Breast implants, rheumatic disease in,
 - prospective cohort studies on, 803-804
- Breastfeeding, adalimumab use in, 360
- Button test, in rheumatoid arthritis assessment, 738

C

- CI inhibitor, action of, 5
- Cachexia, cardiac, from cytokine inhibitors, for rheumatoid arthritis, 253
- CAD/DFF40, in apoptosis, 445
- Cadherins, in phagocytosis, 22
- Cancer, **271-284**
 - from antirheumatic drug therapy, 248-249, 274-276
 - adalimumab, 358, 360
 - etanercept, 323
 - infliximab, 341-342
 - rituximab, 398
 - in rheumatoid arthritis, 858-859
 - mimicking rheumatoid arthritis, 279-281
 - paraneoplastic syndromes due to, versus rheumatoid arthritis, 276-279
 - risk of, in rheumatoid arthritis, 271-274
- Cancer Registry, of Scandinavian countries, 854, 858-859, 862
- Carcinomatous polyarthritis, versus rheumatoid arthritis, 276-277

- Cardiac cachexia, from cytokine inhibitors, for rheumatoid arthritis, 253
- Cartilage, destruction of. *See* Osteoarthritis.
- Case reports, in observational research, 685-686, 691
- Case-control surveillance methodology
causal inferences from, 692-696
for pharmacoepidemiology, 837
- Caspase(s), in apoptosis, 443-445
autoantigen structural alterations and, 461
in rheumatoid arthritis, 601-602
- Caspase inhibitors
for apoptotic cell clearance, 482, 647
for glomerulonephritis, 670
for osteoarthritis, 647
- Caspase-activated DNase, in apoptosis, 445
- Cathepsins, in apoptosis, in osteoarthritis, 645
- Causal inference, principles of, 686-691
causal (structural) models, 691
conventional methods, 689-690
conventional modeling, 690-691
definitions in, 686-687
inverse probability of treatment weighting methods, 690
observational studies, 688-689
randomized trials, 687-688
- Causation, definition of, 686-687
- Cause of Death Registry, of Scandinavian countries, 854, 857-858
- CD14 dendritic cells, 116-118
- CD28
in B-lymphocyte activation, 167
in T-lymphocyte afferent signal regulation, 179-182, 186
- CD31, in apoptotic cell clearance, 479
- CD34 dendritic cells, 116-117
- CD40 and C40 ligand
in B-lymphocyte activation, 167
in systemic lupus erythematosus, 49-50
in T-lymphocyte efferent signal regulation, 182-186
- CD59
deficiency of, autoimmune disease in, 9
in complement activation, 6
- CD64 antibody, toxin to, in fusion protein, for rheumatoid arthritis, 611-612
- CD69 tingible body macrophages, in systemic lupus erythematosus, 519-520
- CD91, in apoptotic cell clearance, 479
- cdc42, in apoptotic cell clearance, 474
- Celecoxib
for osteoarthritis, 705-706
safety of, 840-841
- Cells
necrosis of. *See* Necrosis.
programmed death of. *See* Apoptosis.
- CENP-C (scleroderma autoantigen), cleavage of, in apoptosis, 463
- Central Finland Rheumatoid Arthritis Database, 775
- Centrocytes, apoptosis of, 518-519
- Channeling, of drugs, 845
- Chemokines
in angiogenesis, 105-106
in phagocytosis, 21, 27-29
- Chemotherapy, rheumatism due to, versus rheumatoid arthritis, 276, 278-279
- Chondrocytes, apoptosis of (chondroptosis), 640, 644-646. *See also* Osteoarthritis, apoptosis in.
- Chromatin
fundamental unit of. *See* Nucleosomes.
in immune complexes, Toll-like receptors and, 560-564
- Citrullination, in apoptosis, in autoantigen structural alterations, 466
- Clinical trials and clinical care
for data collection, 761, 763-764
rheumatoid arthritis assessment in, 725-751
- Clodronate, apoptotic cell clearance and, 480
- Clonal ignorance, T lymphocyte function in, 151-152
- Cohort studies, prospective. *See* Prospective cohort studies.
- Collagen IV, as apoptosis protection, 660
- Collagen-induced arthritis, treatment of, 12
- Collectins, in apoptotic cell clearance, 479, 594
- Colorectal cancer, in rheumatoid arthritis, 272-273
- Comparability, in observational research, 686-687, 689-690
- Complement, 1-18
activation of, 1-3
autoimmunity and, 7-9, 11-13
deficiencies of, 7-9

- dual roles of, 12
- effector functions of, 3-5
- in apoptosis, 198-202, 475-476, 481, 488
 - in systemic lupus erythematosus, 496, 517-518
- receptors for
 - deficiencies of, 9-11
 - on phagocytes, 24
 - regulation of, 5-6
- Concordance, twin, in autoimmune disease, 215
- Confidentiality, of patient information, in Rochester Epidemiology Project, 831
- Confounding factors
 - in pharmacoepidemiology, 837-838
 - in Rochester Epidemiology Project, 826
- Congenital heart block, **587-600**
 - apoptosis in
 - consequences of, 594-598
 - in vitro evidence of, 589-591
 - in vivo evidence of, 591-594
 - versus physiologic apoptosis, 588-589
 - differential diagnosis of, 588
- Congestive heart failure, infliximab for, 342
- Connective tissue disorders, prospective cohort studies on, 800, 804
- Consortium of Rheumatology Researchers of North America, 880
- Corticosteroids
 - for glomerulonephritis, 669
 - for rheumatoid arthritis, tuberculosis risk from, 260-261
 - resolvins and, 87-90
 - safety of, in pregnancy, 842
- Cost analysis, 889
- Cost benefit studies, 888
- Cost effectiveness studies, 887-888
- Cost minimization studies, 887-888
- Cost utility studies, 888
- Costimulatory molecules, **175-191**. *See also specific molecules.*
 - B-lymphocyte activation by, 166
 - description of, 175-176
 - families of, 176
 - T-lymphocyte interactions with
 - afferent signals, 178-182
 - animal studies of, 184-185
 - effluent signals, 182-184
 - in rheumatic diseases, 185
 - therapeutic applications of, 185-187
 - two-signal model of, 177-178
- Cost-of-illness studies, in Rochester Epidemiology Project, 830
- Counterfactual process, in observational research, 687
- CpG DNA, in apoptosis induction, 577-579
- C-reactive protein
 - in apoptosis regulation, 476, 510-511, 517
 - in rheumatoid arthritis assessment, 726, 729-730
- Crithidia luciliae immunofluorescent test, for autoantibodies, drug-induced, 340
- CrmA protein, in apoptosis, 444
- Cross-over design
 - in observational research, 696
 - in rheumatoid arthritis clinical trials, 705-706
- Cross-sectional studies, in observational research, 691-692
- Crry-immunoglobulin, for autoimmune disease, 11
- Crypticity, in apoptosis, 456-460
- Cyclooxygenase inhibitors, for apoptotic cell clearance, in osteoarthritis, 647-648
- Cyclooxygenase-1 inhibitors, economic evaluation of, 890
- Cyclooxygenase-2 inhibitors
 - channeling of, 845
 - safety of, 840-841
- Cyclophosphamide, for rheumatoid arthritis, rituximab with, 394-395
- Cyclosporine, for rheumatoid arthritis, methotrexate with, 704
- Cytochrome c, in apoptosis, in rheumatoid arthritis, 602
- Cytokines, **39-65**. *See also specific cytokines.*
 - complement modification of, 8
 - in angiogenesis, 105
 - in apoptosis, 535-536, 660-661
 - in Behcet's disease, 56
 - in giant cell arteritis, 54-55
 - in inflammatory myopathies, 53-54
 - in juvenile rheumatoid arthritis, 46-47
 - in osteoarthritis, 47
 - in phagocytosis, 27-29
 - in rheumatoid arthritis, 40-46
 - in spondyloarthropathies, 46
 - in systemic lupus erythematosus, 47-52
 - in systemic sclerosis, 52-53
 - in T-cell receptor signaling, 145
 - in tuberculosis, 259-260

- in vasculitis, 54-56
in Wegener's granulomatosis, 55-56
- Cytotoxic T lymphocyte(s), 148-149
- Cytotoxic T lymphocyte antigen 4, in
T-lymphocyte afferent signal regulation,
179-182, 186
- Cytotoxic T-lymphocyte antigen
4-immunoglobulin, for rheumatoid
arthritis, **379-389**
autoimmune disease and, 379-381
clinical studies of, 383-385
mechanism of action of, 385-387
methotrexate with, 383-385
preclinical studies of, 382-383
source of, 382
structure of, 381-382
- D**
- Danger model, of immune response, 151
- Databases
American Rheumatism Association
Medical Information System,
770-771, 880
Central Finland Rheumatoid Arthritis
Database, 775
Consortium of Rheumatology
Researchers of North America, 880
German Regional Collaborative Arthritis
Centers, 774-775
ideal, 883
Italian, 777
Nashville, Tennessee, 772-773
National Data Bank for Rheumatic
Diseases, **753-768**
National Health and Nutrition Examina-
tion Surveys (NHANES), **869-878**
Oslo Rheumatoid Arthritis Registry,
773-774
pharmacoepidemiology, 836-837
problems with, 879-883
rheumatoid arthritis, **769-781**
Rochester Epidemiology Project,
819-834
Scandinavian, **851-867**
Spanish, 776-777
Standard Diagnosis Registry of
Rheumatic Diseases, 773
Swedish registry of biologic agents and
leflunomide, 776
uniform, 777
Wichita Database and National Data
Bank, 771-772
- Death effector domains, in apoptosis, 443, 601
- Death receptor pathway, for apoptosis, in
rheumatoid arthritis, 601
- Death-associated molecular patterns (DAMPs),
in apoptosis, 490-491, 493-494
- Death-inducing signaling complex, in
apoptosis, 445, 447-448
- Decay accelerating factor
action of, 5-6
deficiency of, autoimmune disease in,
9-10
- Deimination, in apoptosis, in autoantigen
structural alterations, 466
- Demyelinating disorders, from rheumatoid
arthritis therapy
cytokine inhibitors, 247
etanercept, 322-323
- Dendritic cells, **115-134**
cross-priming by, 125-127
historical overview of, 115-116
immune complex interactions with,
Toll-like receptors and, 564
immunogenic, 121-123
in apoptosis, 203-204, 473,
491-493, 520
interleukin-18 production from, 419
maturation of, 121-123, 509, 630
monocyte-derived
development and function of,
116-118
in rheumatoid arthritis, 123-127
myeloid
development and function of,
116-118
early control of, 118-119
ontogeny of, 116
plasmacytoid, 119-120
receptors on, 120-123
subtypes of, 116
tolerogenic, 123-124, 152-153
- Dermatomyositis, cytokines in, 53-54
- Descriptive observational research, 685-686
- Dexamethasone, in apoptosis induction,
577-579
- Diabetes mellitus, autoimmune, dendritic cell
cross-priming in, 125-126
- Diagnostic criteria, in Rochester Epidemiology
Project, 821
- Diagnostic tests, observational studies for, 696
- Diapedesis, in phagocytosis, 21-22
- Diclofenac, for osteoarthritis, 705
- Dihydroorotate dehydrogenase, leflunomide
inhibition of, 293-294

- Disability
 databases on, 860
 in elderly, in NHANES, 873-874
- Disease activity score, for rheumatoid arthritis assessment, 742-743
- Disease-modifying antirheumatic drug therapy.
 See also specific drugs.
 anakinra with, 370-372
 economic evaluation of, 888-891
 for inflammatory polyarthritis, 694
 malignancy due to, 274-276
- DNA
 antibodies to, in systemic lupus erythematosus, 516-517
 bacterial, immunogenic effects of, 558
 degradation of, in apoptotic cell clearance, 480, 603-604
 release of, in systemic lupus erythematosus, **573-585**
 agents inducing, 577-579
 assays for, 576-577
 cell death processes and, 574-575
 in dead and dying cell administration, 579-582
 properties of, 575-576
- DNases, in apoptosis, 445-446, 480, 518, 532
- Docosahexaenoic acid, resolvins synthesized from, 90
- Dominance, immunologic, in apoptosis, 456-458
- Drugs
 economic evaluation of, 888-891
 research on. *See* Pharmacoeconomics.
- dsDNA, antibodies to, in systemic lupus erythematosus, 516-517
- E**
- Economic aspects, of health services research, 887-889
- Eicosanoid oxidoreductase, inhibition of, 76
- Elderly persons
 adalimumab therapy in, 359
 disability in, in NHANES, 873-874
- Encounter-specific data, in Rochester Epidemiology Project, 821
- Endoplasmic reticulum, in apoptosis, 450-451
- Endothelial cells, vascular, **97-114**
 adhesion molecule interactions with, 99-103, 107-108
 apoptosis of, in glomerulonephritis, 662-663
 cytokine production in, in rheumatoid arthritis, 42-44
 in angiogenesis, 104-108
 in inflammation, 98-99, 103
 lipoxin effects on, 83
 morphology of, 98-99
 permeability of, 98-99
- Endotoxemia, high-mobility group box chromosomal protein 1 (HMGB1) in, 627
- Enterocytes, lipoxin effects on, 81
- Eosinophilic fasciitis, versus rheumatoid arthritis, 276, 278
- Epidemiologic research
 databases for. *See* Databases.
 observational studies in. *See* Observational research.
- Epidemiologic studies
 of osteoarthritis, **783-797**
 pharmacoeconomics, **835-850**
 Rochester Epidemiology Project, **819-834**
- Epithelial cells
 apoptosis of, in glomerulonephritis, 662
 aspirin-triggered lipoxin effects on, 86-87
- Epitope spreading, B lymphocytes in, 168
- Erythrocyte sedimentation rate, in rheumatoid arthritis assessment, 726, 729-730
- Esophageal cancer, in rheumatoid arthritis, 272-273
- Etanercept
 for ankylosing spondylitis, 320-321
 for juvenile chronic arthritis, 317-318
 for psoriatic arthritis, 318-320
 for rheumatoid arthritis, **309-326**, 703
 absorption of, 310
 anakinra with, 316-317, 373-374
 early, 315-316
 economic evaluation of, 890
 methotrexate with, 313-314, 316
 once weekly dosage for, 317
 pharmacokinetics of, 310
 pharmacology of, 309-310
 phase II studies of, 310-311
 phase III studies of, 311-312
 radiologic evaluation of, 289-290, 315-316
 safety of, 242-252
 structure of, 309
 toxicity of, 322-323
 tuberculosis risk from, 261-262
 versus methotrexate, 314-316, 711
 for Wegener's granulomatosis, 321
- Etoposide, for rheumatoid arthritis, 611

Evidence-based rheumatology
clinical trials in, 701-724
data collection, maintenance, and
analysis for, 753-768
health services research in, 879-898
national databases in, 851-867,
869-878
National Health and Nutrition Examina-
tion Surveys (NHANES), 869-878
observational research in, 685-699
osteoarthritis epidemiologic studies in,
783-797
pharmacoepidemiology in, 835-850
prospective cohort studies in, for risk
factor determination, 799-817
rheumatoid arthritis databases in,
769-781
rheumatoid arthritis quantitative
measures and indices in, 725-751
Rochester Epidemiology Project in,
819-834

Extracellular matrix
as apoptosis protection, 660
phagocytic activity in, 22

Eye, lipoxin effects on, 83

F

Factor H
action of, 5-6
deficiency of, autoimmune disease in, 10
FADD protein, in apoptosis, 447, 462
in congenital heart block, 589-590, 593
in rheumatoid arthritis, 601
Familial aggregation, of autoimmune disease,
213-215
Farming exposure, systemic vasculitis and, 693
Fas and FasL, in apoptosis, 447-448, 491,
660-661
in autoantigen structural alterations,
461-462
in congenital heart block, 589-590, 593
in rheumatoid arthritis, 601, 609-610,
612-613
in systemic lupus erythematosus, 529
Fasciitis, palmar, versus rheumatoid arthritis,
276, 278
Fasciitis-panniculitis syndrome, versus
rheumatoid arthritis, 276, 278
Fatigue measurement, for rheumatoid arthritis
assessment, 737
FcγR receptors
in phagocytosis, 23-24
in T-lymphocyte afferent signal
regulation, 179-180

FcγRIIA, in apoptosis, in systemic lupus
erythematosus, 518

Fetus, heart block in. *See* Congenital
heart block.

Fibroblasts
in apoptosis, in rheumatoid arthritis,
612-616
lipoxin effects on, 81, 87

FLICE-like inhibitory protein family (FLIP), in
apoptosis, 444-445, 448
in rheumatoid arthritis, 601, 609-610,
612-613

Framingham Study, 801, 812-814

Functional evaluation, for rheumatoid arthritis
assessment, 726, 738-739

G

Gastrointestinal system
alendronate effects on, 842-843
inflammation of, lipoxin in, 82
NSAID effects on, 839

GATA-3 transcription factor, T lymphocytes
and, 146

Genealogy Database, of Scandinavian
countries, 855-856, 859-860

Genetic factors
in autoimmune disease. *See* Autoimmune
disease, genetics of.
in rheumatoid arthritis, 859-860
in Rochester Epidemiology Project,
825-826
in systemic lupus erythematosus,
517-518

German Regional Collaborative Arthritis
Centers, 774-775

Germinal centers, of lymph tissue, apoptotic
cell clearance in, 512, 518-521

Giant cell arteritis
cytokines in, 54-55
medical record data on, in Rochester
Epidemiology Project, 821, 825

Global measures, for rheumatoid arthritis
assessment, 726, 738-739

Glomerulonephritis, apoptosis in, 653-674
antinucleosome antibodies in, 543-546
cell recognition and phagocytosis in,
654-655
detection of, 656-658
incidence of, 655
kinetics of, 654
mechanisms of, 658-661, 667-669

- modulation of, 669-670
 - of endothelial cells, 662-663
 - of epithelial cells, 662
 - of leukocytes, 664-667
 - of mesangial cells, 658-661
 - tubulointerstitial, 663-664
- Glucocorticoid-induced leucine zipper protein, in phagocytosis, 33
- Gold salts, for rheumatoid arthritis, 709, 713
- Gout
- medical record data on, in Rochester Epidemiology Project, 821
 - prospective cohort studies on, 801, 809-812
- Granules, in neutrophils, in phagocytosis, 26-27
- Granulocytes, impaired activity of, in systemic lupus erythematosus, 514-515
- Granzymes
- in apoptosis, 198, 462-464, 533
 - in cytotoxic T lymphocytes, 148
- Grip strength, in rheumatoid arthritis assessment, 738
- Growth factors, in angiogenesis, 104-105
- Gruppo Italiano Artrite Reumatoide
- Aggressiva database, 777
- GULP protein, in apoptotic cell clearance, 474
- ## II
- Hand, osteoarthritis of, prospective cohort studies on, 813
- Health Assessment Questionnaire, 730-735, 883-884
- Health Insurance Portability and Accountability Act, 831
- Health Professionals Follow-up Study, 801, 808-810
- Health services research, **879-898**
- databases for, problems with, 879-883
 - economic aspects of, 887-889
 - instruments for
 - disease-specific, 883-884
 - generic, 883-886
 - selection of, 884-885
 - theoretic construct of, 884
 - on new treatments, 889-891
 - patient self-assessment in, 886
- Heart, apoptosis in, 588-589
- Heart block, congenital. *See* Congenital heart block.
- Heart failure
- from cytokine inhibitors, for rheumatoid arthritis, 253
 - infliximab for, 342
- Helper T lymphocytes, 146-148
- Hemoglobinuria, paroxysmal nocturnal, complement deficiency in, 9-10
- Hemolytic uremic syndrome, in factor H defects, 10
- Hepatocellular carcinoma autoantigen, structural alterations of, in apoptosis, 464-465
- Hereditary angioneurotic edema, complement deficiencies in, 9
- High endothelial venule-like microvessels, in inflammation, 99-100
- High-affinity ligand binding, in apoptosis, autoimmunity induction in, 459-460
- High-mobility group box chromosomal protein 1 (HMGB1), **625-635**
- biochemistry of, 628-629
 - discovery of, 626
 - extracellular release of, 629-630
 - in arthritis, 630-632
 - in necrosis, 509
 - in severe sepsis, 627-628
 - inhibitors of, for arthritis, 632
 - receptors for, 628
- Hip
- fractures of, prospective cohort studies on, 813-814
 - osteoarthritis of, prospective cohort studies on, 804-805
- Histamine-mediated injury, to endothelial cells, 98
- Histones, in apoptosis, 534
- Histoplasmosis, risk of, in etanercept therapy, 322
- HLAs. *See* Human leukocyte antigens.
- HMGB1. *See* High-mobility group box chromosomal protein 1 (HMGB1).
- Hospital Discharge Registry, of Scandinavian countries, 855, 858-859, 861
- Hrd1, in apoptosis, in rheumatoid arthritis, 615
- Human immunodeficiency virus infection
- HLAs in, 222-223
 - incompetent cytotoxic T lymphocytes in, 149
- Human leukocyte antigens, in autoimmune disease, 216-224
- allele association in, 222-224

disease classification based on, 221-222
importance of, 217-218
physiologic response and, 218-220
target autoantigen distribution and,
220-221

T-lymphocyte repertoire in, 224-227

Human subjects, protection of, in Rochester
Epidemiology Project, 831

Hyaluronan, for osteoarthritis, 648

Hydroxychloroquine, for rheumatoid arthritis,
703, 705, 709

15-Hydroxyprostaglandin dehydrogenase,
inhibition of, 76

Hypocomplementemia, in pregnancy, 10

I

Ibuprofen, safety of, 839
in pregnancy, 842

Immune complexes, chromatin-containing,
Toll-like receptors and, 560-564

Immune ignorance, in apoptosis, 202-203

Immune thrombocytopenia, rituximab for, 398

Immunity, innate, T lymphocytes and,
141-143

Immunoglobulin(s)
cytotoxic T-lymphocyte antigen 4, for
rheumatoid arthritis, 379-389
description of, 160-162

Immunoglobulin G, in congenital heart block,
593-594

Immunoglobulin M, in apoptotic cell
clearance, 532

Immunoglobulin superfamily
costimulatory function of, 176
in leukocyte-endothelial interactions, 101

Immunoglobulin-like transcript-like receptors,
of dendritic cells, 120

Immunologic synapse, in T-lymphocyte
activation, 143-145

Immunology
apoptosis. *See* Apoptosis.
complement. *See* Complement.
costimulatory molecules, 166, 175-191
cytokines. *See* Cytokines.
dendritic cells. *See* Dendritic cells.
endogenous small molecules for
inflammation resolution, 67-95
endothelial cells, 42-44, 97-114
genetic factors in, 213-227

lymphocytes. *See* B lymphocytes;
T lymphocytes.
phagocytes, 19-38, 199-200

Immunoreceptor tyrosine-based activation
motifs, in B-lymphocyte activation, 166

Inactivity, in NHANES, 874

Inclusion body myositis, cytokines in, 53-54

Inducible costimulator molecule, 179, 182, 186

Infections

from rheumatoid arthritis therapy
adalimumab, 357-358
cytokine inhibitors, 243-247
infliximab, 339-340
lipoxin in, 82

Inflammation

endothelial cells and
adhesion regulation in, 103
morphology and permeability of,
98-99
in systemic lupus erythematosus, 52
in T-lymphocyte dysregulation, 146-147
interleukin-6 in, 406-407
interleukin-18 in, 420
phagocytes in. *See* Phagocytes.
resolution of, endogenous small
molecules for, 67-95
agonists, 75-77
cell-cell interaction in, 71-75
disease associations of, 77-83
in combination therapies, 87-90
new, 90-91
overview of, 67-71
receptors for, 83-87
resolvins, 90-91
types of, 68
treatment of, angiogenesis inhibitors
in, 108

Inflammatory bowel disease

cytokines in, 46
interleukin-18 in, 426-427

Inflammatory myopathies, cytokines in, 53-54

Inflammatory polyarthritis, disease-modifying
antirheumatic drug therapy for, 694

Infliximab

economic evaluation of, 890
for congestive heart failure, 342
for rheumatoid arthritis, 327-345
apoptosis induction in, 606-607
in early disease, 337-339
methotrexate with, 332-338
pharmacokinetics of, 333
phase II trials of, 330-334
phase III trials (ATTRACT) of,
334-338

- proof of principle trials of, 327-330
 - radiologic evaluation of, 289-291
 - safety of, 242-252, 339-342
 - single-infusion, 330-332
 - tuberculosis risk from, 261-264
- Infusion reactions, from cytokine inhibitors, for rheumatoid arthritis, 243
- Inhibitors of apoptosis proteins, 443-444
- Injection site reactions, from cytokine inhibitors, for rheumatoid arthritis, 242
- Insulin-like growth factor 1, for glomerulonephritis, 670
- Integrins
 - in angiogenesis, 106
 - in leukocyte-endothelial interactions, 100
 - in phagocytosis, 21-22
- Intercellular cell adhesion molecule-1, in leukocyte-endothelial interactions, 101
- Intercellular gaps, in endothelium, 98-99
- Interferon- β , for apoptotic cell clearance, 482
- Interferon- γ
 - in interleukin-18 binding protein expression, 423
 - in phagocytosis, 31
 - interleukin-18 production and, 415-416, 420
- Interleukin(s)
 - in angiogenesis, 105
 - in inflammatory myopathies, 53-54
 - in leukocyte-endothelial interactions, 103
 - in osteoarthritis, 47
 - in phagocytosis, 21-22, 25, 30-35
 - in rheumatoid arthritis, 41-45
 - in systemic lupus erythematosus, 50-52
- Interleukin-1
 - family of, 415
 - in apoptosis, in osteoarthritis, 643
- Interleukin-1 receptor antagonists, anakinra as. *See* Anakinra.
- Interleukin-1 β , secretion of, 418
- Interleukin-1 β converting enzyme (ICE, caspase-1)
 - in interleukin-18 production, 416
 - interleukin-18 processing without, 419-420
- Interleukin-6, 403-413
 - function of, 406
 - in apoptosis, in rheumatoid arthritis, 616
 - in rheumatoid arthritis pathogenesis, 406-407
 - inhibitors of, for rheumatoid arthritis, 407-410
 - receptor for, in signal transduction, 405
 - structure of, 404-405
 - superfamily of, 404-405
 - synonyms for, 404
- Interleukin-15, in rheumatoid arthritis, 607
- Interleukin-18
 - in hepatic injury, models of, 427-428
 - in inflammatory bowel disease, models of, 426-427
 - in rheumatoid arthritis pathogenesis, 415-432
 - historical review of, 415-416
 - mechanisms of, 416-417, 420
 - models of, 424-426
 - processing of, 419-420
 - production of, 417-420
 - protein binding and, 421-424
 - P2X-7 receptor and, 418-419
 - release of, 417-420
 - soluble receptor of, 423-424
- Internet, outcomes questionnaires on, 759, 761-762
- Inverse probability of treatment weighting methods, in observational research, 690
- Iowa Women's Study, 800, 805-807
- Isoaspartyl linkages, in apoptosis, in autoantigen structural alterations, 465-466
-
- J**
- Janus kinase, in phagocytosis, 34-35
- Johns Hopkins Precursor Study, 801, 811-812
- Joint counts, for rheumatoid arthritis assessment, 726-728, 739
- Juvenile chronic arthritis/juvenile rheumatoid arthritis
 - cytokines in, 46-47
 - etanercept for, 317-318
 - interleukin-6 monoclonal antibody for, 410
 - medical record data on, in Rochester Epidemiology Project, 821, 825
-
- K**
- Kidney
 - apoptosis in
 - beneficial aspects of, 655-656
 - cell recognition and phagocytosis in, 654-655
 - defective, 667-669
 - deleterious, 655. *See* also Glomerulonephritis.

- detection of, 656-658
 - in inflammation, 656-658
 - kinetics of, 654
 - modulation of, 669-670
 - of endothelial cells, 662-663
 - of glomerular epithelial cells, 662
 - of leukocytes, 664-667
 - of mesangial cells, 658-661
 - stimulation of, 660-661
 - failure of, NSAID-induced, 840
 - inflammation of, lipoxin in, 82
- Knee, osteoarthritis of
- epidemiology of, 783-784
 - prospective cohort studies on, 794-795, 811-813
 - preparing for, 789-794
 - radiology of, 787-788
 - risk factors for, 788-789
- L**
- Laboratory tests, for rheumatoid arthritis
- assessment, 726, 729-730, 739
- Lacunae, cell remnant extrusion into, in apoptosis, in osteoarthritis, 646
- Laminin, as apoptosis protection, 660
- Lansbury systemic manifestations, for rheumatoid arthritis assessment, 740-741
- Larsen method, for rheumatoid arthritis radiographic assessment, 729
- Lck kinase, in T-cell receptor signaling, 145
- Leflunomide, for rheumatoid arthritis, 293-307
- contraindications to, 241
 - economic evaluation of, 889
 - hepatotoxicity of, 304-306
 - mechanism of action of, 293-295
 - methotrexate with, 300-304
 - pharmacokinetics of, 293
 - phase II studies of, 296
 - phase III studies of, 296-298
 - radiologic evaluation of, 289, 291, 298-299
 - safety of, 239-241
 - in pregnancy, 841
 - versus methotrexate, 703-704
- Leukemia, musculoskeletal, versus rheumatoid arthritis, 279, 281
- Leukocyte(s)
- apoptosis of, in glomerulonephritis, 664-667
 - aspirin-triggered lipoxin effects on, 86
 - endothelial cell interactions with, 99-103
 - lipoxin effects on, 79, 81
 - Leukocyte-mediated vascular injury, 98-99
- Licofelone, for apoptotic cell clearance, in osteoarthritis, 647-648
- LICOS (inducible costimulator molecule), 179, 182, 186
- "Limited n" studies, in observational research, 691
- Linear models, in observational research, 691
- Lipoxygenase inhibitors, for apoptotic cell clearance, in osteoarthritis, 647-648
- Lipopolysaccharide, in apoptosis induction, 577-579
- Lipoxins
- actions of, 68-71
 - in cellular systems, 79-81
 - in disease, 81-83
 - analogs of, 76-77
 - aspirin-triggered. *See* Aspirin-triggered lipoxins.
 - discovery of, 68
 - formation of, 71-75
 - in animal models, 77-78
 - in human disease, 78
 - inactivation of, 75-77
 - receptors for, 83-87
 - therapies related to, 87-90
- Listeriosis, risk of, in etanercept therapy, 322
- Liver
- autoimmune disease of, interleukin-18 in, 427-428
 - toxicity to, antirheumatic drugs, 240-241, 251, 304-306
- Longitudinal medical histories, in Rochester Epidemiology Project, 823-824
- Lung, inflammation of, lipoxin in, 81-82
- Lupus syndrome, drug-induced, in rheumatoid arthritis therapy, 249-251, 340
- Lyme disease vaccine, safety of, 843
- Lymph nodes, apoptotic cell clearance in, 512
- Lymphatic tissue, germinal centers of, apoptotic cell clearance in, 512, 518-521
- Lymphokines, 146
- Lymphoma
- from antirheumatic drug therapy, 248-249
 - adalimumab, 358
 - etanercept, 323
 - in rheumatoid arthritis, 272-275, 341-342, 858-859
 - musculoskeletal, versus rheumatoid arthritis, 279, 281

Lymphoproliferative disorders, in rheumatoid arthritis, 275-276

Lysozymes, in phagocytosis, 26-27

M

McGill Pain Questionnaire, for rheumatoid arthritis, 737

Macrophage(s)

- apoptosis of, resistance to, in rheumatoid arthritis, 609-612
- HMGB1 activation of, 628-629
- impaired activity of, in systemic lupus erythematosus, 514
- phagocytic activity of. *See* Phagocytes.
- tingible body, in systemic lupus erythematosus, 512, 519-520

Magnetic resonance imaging, in osteoarthritis, 787-788

Major histocompatibility complex

- autoantigen processing by, dominance and crypticity in, 456-458
- genes of, in autoimmune disease, 216-224
 - allele association in, 222-224
 - disease classification based on, 221-222
 - importance of, 217-218
 - physiologic response and, 218-220
 - target autoantigen distribution and, 220-221
- T-lymphocyte repertoire in, 224-227

Malignancy. *See* Cancer.

Malononitriloamide, as leflunomide metabolite, 293

Mannose-binding lectin

- gene for, complement deficiencies and, 8-9
- in apoptotic cell clearance, 479

Matching, in observational research, 689-690

Matrix metalloproteinases

- in angiogenesis, 106
- in rheumatoid arthritis, 45-46

Mayo Clinic, Rochester Epidemiology Project and. *See* Rochester Epidemiology Project.

MCH. *See* Major histocompatibility complex.

Mcl-1 protein, in apoptosis, 449, 603, 611-612

Medical records, in Rochester Epidemiology Project. *See* Rochester Epidemiology Project.

Medication Reimbursement Registry, of Scandinavian countries, 855-858, 860-862

Meloxicam, channeling of, 845

Membrane cofactor protein

- abnormalities of, in pregnancy, 10
- action of, 5-6

Memory T lymphocytes, 149-150

Mer protein, in apoptosis, 200, 474, 477-478, 532-533

Mesangial cells, apoptosis of, in glomerulonephritis, 658-661

Metastasis, arthritis in, versus rheumatoid arthritis, 279-280

Methotrexate, for rheumatoid arthritis, 704-705, 709, 713

- adalimumab with, 349-350, 352, 355-357, 359

- anakinra with, 366-367, 369-370

- apoptosis induction in, 605-606

- beneficial effects of, 843-844

- cohort studies of, 695-696

- cyclosporine with, 704

- cytotoxic T-lymphocyte antigen

- 4-immunoglobulin with, 383-385

- economic evaluation of, 889-890

- etanercept with, 313-314, 316

- infliximab with, 332-338

- interleukin-6 monoclonal antibody with, 410

- leflunomide with, 300-304

- malignancy due to, 275

- safety of, in pregnancy, 841

- versus etanercept, 314-316, 711

- versus leflunomide, 296-298, 703-704

Misoprostol, for osteoarthritis, 705

Mitochondria-dependent pathway, in apoptosis, 602-603

Mitogen-activated protein kinase, in phagocytosis, 34-35

Modified Health Assessment Questionnaire, for rheumatoid arthritis assessment, 729, 735, 737-738

Molecular mimicry, in tolerance breakdown, 151

Monoclonal antibodies, to interleukin-6, for rheumatoid arthritis, 408-410

Monocyte(s), apoptosis of, in glomerulonephritis, 667

Monocyte chemotactic factor, in apoptosis regulation, 510

Monocyte-derived dendritic cells development and function of, 116-118 in rheumatoid arthritis, 123-127

- Mononuclear phagocyte system.
See Phagocytes.
- Mortality
in rheumatoid arthritis, 857
predictors of, in NHANES, 874
- Multicenter Osteoarthritis Study, 794-795
- Multicentric reticulohistiocytosis, versus
rheumatoid arthritis, 276-277
- Multi-Dimensional Health Assessment
Questionnaire, for rheumatoid arthritis
assessment, 731-733, 735, 737
- Multiple myeloma
in rheumatoid arthritis
versus rheumatoid arthritis, 279-280
- Multiple sclerosis
cytokine inhibitor exacerbation of, 337
infliximab exacerbation of, 340-341
- Mycobacterium tuberculosis* infections.
See Tuberculosis.
- Myeloid cells, lipoxin effects on, 79, 81
- Myeloid dendritic cells
development and function of, 116-118
early control of, 118-119
- Myocardium, apoptosis in, 588-589
- Myofibroblasts, in congenital heart block,
596-598
- Myopathies, inflammatory, cytokines in,
53-54
- N**
- "n of 1" studies, in observational research, 691
- Nashville, Tennessee, rheumatology databases,
772-773
- National Data Bank for Rheumatic Diseases,
753-768
data analysis in, 764
data collection in
methods for, 761-764
type of, 755
data validation in, 765-766
database components in, 754
observational data banks versus random-
ized controlled trials in, 753-754
protocols for, 766
questionnaire for, 755-761
- National Health and Nutrition Examination
Surveys (NHANES), 869-878
musculoskeletal disorder studies in,
872-875
purpose of, 869
Survey I, 870
Survey II, 870-871
Survey III, 871-872
- National Insurance Administration, of
Scandinavian countries, 860
- Necrosis
description of, 506-507
HMGB1 release in, 509, 629-630
in osteoarthritis, 644
in systemic lupus erythematosus, 574
cell clearance in, 494-496
T-lymphocyte tolerance and, 515
regulation of, 667
versus apoptosis, 506-507, 638
- Neonatal lupus syndrome, heart block in. See
Congenital heart block.
- Neovascularization
endothelium role in
clinical perspectives of, 107-108
pathophysiology of, 104-107
in rheumatoid arthritis, 44-45
inhibitors of, 106-107
- Neutrophil(s)
apoptosis of
in glomerulonephritis, 664-667
in inflammation resolution,
604-605
in rheumatoid arthritis, 612
HMGB1 activation of, 628-629
phagocytic activity of. See Phagocytes.
- NHANES. See National Health and Nutrition
Examination Surveys (NHANES).
- Nitric oxide
in apoptosis, 642-643, 661
in phagocytosis, 27
- Nitric oxide synthase inhibitors, for apoptotic
cell clearance, in osteoarthritis, 647
- Nonsteroidal anti-inflammatory drugs
authorization for, 845
economic evaluation of, 888-889
for osteoarthritis, 648
for rheumatoid arthritis, 713-714
lipoxin activation by, 76
prospective cohort studies on, 805-807
safety of, 839-840
in pregnancy, 842
- Nordic Biological Specimen Banks for Cancer
Causes and Control, 856-857
- Normative Aging Study, 801, 810-811
- NSAIDs. See Nonsteroidal
anti-inflammatory drugs.
- Nuclear factor KB, in apoptosis
in osteoarthritis, 643-644
in rheumatoid arthritis, 610-612, 614

- Nucleosomes, in systemic lupus erythematosus, 494-495, **527-555**
 - antibodies to, 537-546
 - antigenicity of, factors contributing to, 535-536
 - balance of, 529-531
 - cell clearance defects and, 531-533
 - modification of, 533-535
 - sources of, 527-528
 - structure of, 529
 - T-lymphocyte recognition of, 536-537

Nurses Health Study, 800, 802-805

O

- Observational research, **685-699**
 - causal inference in, 686-691
 - causal (structural) models in, 691
 - causal research and, 688-689
 - causation in, 686-687
 - comparability in, 686-687, 689-690
 - conventional methods in, 689-690
 - conventional modeling in, 690-691
 - data banks for
 - data analysis in, 764
 - data collection in, 755, 761-764
 - data validation in, 765-766
 - database components in, 754
 - protocols for, 766
 - questionnaire for, 755-761
 - versus randomized controlled trials, 753-754
 - descriptive, 685-686
 - for diagnostic studies, 696
 - future of, 696-697
 - inverse probability of treatment
 - weighting methods in, 690
 - randomized trials in, 687-688
 - types of, 691-696
- Ocular pressure, lipoxin effects on, 83
- Olmstead County, Minnesota, Rochester Epidemiology Project and. *See* Rochester Epidemiology Project.
- Oslo Rheumatoid Arthritis Registry, 773-774
- Osteoarthritis
 - apoptosis in, **637-651**
 - cell biology and, 648-649
 - cell senescence and degeneration in, 646-647
 - cellular features of, 637-640
 - incidence of, 639, 641
 - inductive mechanism of, 641-644
 - morphology of, 644-646
 - therapeutic options related to, 647-648
 - cytokines in, 47

- epidemiology of, **783-797**
 - current insights into, 783-784
 - current studies of, limitations of, 784-789
 - Multicenter Osteoarthritis Study of, 794-795
 - Osteoarthritis Initiative study of, 794-795
 - study design parameters for, 789-794
- in NHANES, 872-873
- medical record data on, in Rochester Epidemiology Project, 821, 830
- onset of, 789-792
- progression of, 788-789
- prospective cohort studies on, 800-801, 804-805, 811-813
- risk factors for, 784-786, 788-792
- treatment of, clinical trials of, 705-706

Osteoarthritis Initiative study, 794-795

Osteoclasts, apoptosis of, in rheumatoid arthritis, 616-617

Osteoporosis, in NHANES, 874-875

Osteoprotegerin ligand, in rheumatoid arthritis, 149

Outcomes. *See also* Health services research. long-term, in Rochester Epidemiology Project, 824-825
questionnaires for, 755-761

OX40, in T-lymphocyte afferent signal regulation, 179

P

- p53 gene product, in apoptosis, in rheumatoid arthritis, 616
- PACES (Patient Preference for Placebo, Acetaminophen or Celecoxib Evaluation Studies), 705-706
- Pain
 - in osteoarthritis, threshold of, 792-794
 - in rheumatoid arthritis, assessment of, 736-737
- Palmar fasciitis, versus rheumatoid arthritis, 276, 278
- Pancytopenia, from cytokine inhibitors, for rheumatoid arthritis, 247
- Panniculitis, versus rheumatoid arthritis, 276, 278
- Parallel design, for rheumatoid arthritis clinical trials, 702-704
- Parametric methods, in observational research, 690-691

- Paraneoplastic syndromes, versus rheumatoid arthritis, 276-279
- Paraptosis, in osteoarthritis, 639
- Paroxysmal nocturnal hemoglobinuria, complement deficiency in, 9-10
- Pathogen-associated molecular patterns (PAMPs), 142-143, 493-494
- Pathology specimens, in Rochester Epidemiology Project, 824
- Patient only index, for rheumatoid arthritis assessment, 742-744
- Patient Preference for Placebo, Acetaminophen or Celecoxib Evaluation Studies (PACES), 705-706
- Pattern recognition molecules, in phagocytosis, 594
- Pattern-recognition receptors, 142-143
- Paulus criteria, for rheumatoid arthritis assessment, 741-742
- PD-1, in T-lymphocyte afferent signal regulation, 180, 185, 187
- Pemphigus vulgaris, HLAs in, 224
- Penetrance rate, of autoimmune disease, 215-216
- Penicillamine, for rheumatoid arthritis, 709, 713
- Pentraxin PTX3, in apoptosis regulation, 511
- Perforin, in cytotoxic T lymphocytes, 148
- Peripheral tolerance, in apoptosis, 203-204
- Phagocytes, **19-38**
 action of, definition of, 23
 apoptotic cell recognition by, 199-200
 during transition from acute to chronic inflammation, 22-25
 dysregulation of, 29-34
 macrophage activation, 30-31
 neutrophil activation, 29-30
 mediators produced by, 25-29, 34-35
 migration mechanisms of, 20-22
 receptor interactions with, 23-24
- Phagocytosis, in apoptosis. *See also* Apoptosis, clearance in.
 chemoattractants in, 509-511
 defective, 668-669
 in congenital heart block, 594-598
 in different tissues, 511-513
 in kidney, 654-655
 signals in, 488-491, 507-508
- Pharmacoepidemiology, **835-850**
 confounding and bias in, 837-838
 data sources for, 836-837
 drug beneficial effect studies in, 843-845
 drug safety studies in, 838-843
 alendronate, 842-843
 cyclooxygenase-2 inhibitors, 840-841
 in pregnancy, 841-842
 Lyme disease vaccine, 843
 NSAIDs, 839-840
 tumor necrosis factor- α inhibitors, 843
 study designs for, 837
- Phosphatase and tensin homolog deleted from chromosome 10 (PTEN), in apoptosis, in rheumatoid arthritis, 614
- Phosphatidylserine, in apoptosis
 in cell clearance, 476-477
 recognition of, 199-200
- Phospholipase, secretory, in apoptosis regulation, 510-511
- Phospholipids, in apoptotic cell clearance, 508
- Phosphorylation, of autoantigens, in apoptosis, 465
- Physical activity, in NHANES, 874
- Physical examination, for rheumatoid arthritis assessment, 726
- PI3K/Akt-1 pathway, in apoptosis, in rheumatoid arthritis, 611, 614
- Plasmacytoid dendritic cells, development and function of, 119-120
- Polyarthritis
 carcinomatous, versus rheumatoid arthritis, 276-277
 inflammatory, disease-modifying anti-rheumatic drug therapy for, 694
- Polymyalgia rheumatica, medical record data on, in Rochester Epidemiology Project, 821, 825, 830
- Polymyositis, cytokines in, 53-54
- Polyomavirus infections, autoimmunity in, 536
- Population Registry, of Scandinavian countries, 853-854, 857-858, 861
- Poxvirus apoptosis inhibitory protein, 444
- Prednisolone, for rheumatoid arthritis, 704
- Pregnancy
 complement regulation in, 10
 drug safety in, 841-842
 rheumatoid arthritis therapy in
 adalimumab, 359
 cytokine inhibitors, 251-252
 leflunomide, 241
 SLE in, congenital heart block in. *See* Congenital heart block.

- Prescription Registry, of Scandinavian countries, 855-856, 860
- Programmed cell death 1 protein, in T-lymphocyte afferent signal regulation, 179-180
- Propensity score methods, in observational research, 690
- Prospective cohort studies, **799-817**
both male and female, 801, 811-814
causal inferences from, 692-696
characteristics of, 799-802
female, 800, 802-808
infrastructure for, in Rochester Epidemiology Project, 826-827
male, 801, 808-811
of drugs, 837
- Prostaglandins
in angiogenesis, 106
in phagocytosis, 29
- Proteolysis, novel or impaired, in apoptosis, autoimmunity induction in, 458-459
- P-selectin glycoprotein ligand 1, in phagocytosis, 21
- Psoriatic arthritis
cytokines in, 46
etanercept for, 318-320
familial aggregation of, 213-214
medical record data on, in Rochester Epidemiology Project, 821, 825, 830
- P2X-7 receptor, in interleukin-18 secretion, 418-419
- Q**
- Questionnaires
for outcomes research, 755-762
comprehensive versus brief, 755-757
data capture in, 759, 761
duplication of content in, 757-758
Internet-based, 759, 761-762
problems with, 759
treatment data in, 759-760
for rheumatoid arthritis assessment, 726, 730-736, 739-740, 744-746
- R**
- Rac2 protein, in apoptotic cell clearance, 474
- Radiology
in osteoarthritis epidemiologic studies, 786-788
in rheumatoid arthritis assessment, 726, 728-729, 738-739
- in rheumatoid arthritis treatment evaluation, **285-292**
anakinra, 289, 372-373
data analysis and presentation in, 287-288
etanercept, 289-290, 315-316
infliximab, 289-291
leflunomide, 289, 291, 298-299
scoring issues in, 286-287
study design for, 285-286
records of, in Rochester Epidemiology Project, 824
- Randomized controlled trials
in causal research, 687-688
versus observational data banks, 753-754
- RANK and RANKL, in apoptosis, in rheumatoid arthritis, 616-617
- Ratingen score, for rheumatoid arthritis radiographic assessment, 729
- Raynaud's phenomenon, apoptosis dysregulation in, 197
- Reactive arthritis, cytokines in, 46
- Reactive nitrogen species, in phagocytosis, 27
- Reactive oxygen species, in phagocytosis, 27
- Recall bias, minimization of, in Rochester Epidemiology Project, 828-829
- Receptor for advanced glycation end-products, HMGB1 interactions with, 628-629
- Referral bias, minimization of, in Rochester Epidemiology Project, 827
- Registry of Population Changes, of Scandinavian countries, 858
- Regression models, in observational research, 691
- Regulators of complement activity, 5-6
- Remitting seronegative symmetric synovitis with pitting edema, versus rheumatoid arthritis, 276-277
- Research, observational. *See* Observational research.
- Resoleomics, in inflammation. *See* Inflammation, resolution of, endogenous small molecules for.
- Resolvins, in inflammation, 90-91
- Reticulohistiocytosis, multicentric, versus rheumatoid arthritis, 276-277
- Rheumatism, postchemotherapy, versus rheumatoid arthritis, 276, 278-279

Rheumatoid arthritis

- apoptosis in, **601-623**
 - current therapy based on, 605-607
 - death-receptor pathway in, 601
 - in inflammation resolution, 604-605
 - incidence of, 603-604
 - mitochondria-dependent pathway in, 602-603
 - resistance to
 - in fibroblasts, 612-616
 - in macrophages, 609-612
 - in neutrophils, 612
 - in osteoclasts, 616-617
 - in T lymphocytes, 607-609
 - therapy based on, 607-617
- B lymphocytes in, 168-169
- cancer incidence in, 858-859
- clinical trials and clinical care in, **701-724, 725-751**
 - designs of, 702-706
 - cross-over, 705-706
 - influencing results, 715
 - parallel, 702-704
 - step-down, 704-705
 - step-up, 704
 - limitations of, 706-717
 - intrinsic, 715-717
 - pragmatic, 709-715
 - long-term observational research for, 717-718
 - quantitative measures and indices for
 - advantages and disadvantages of, 738-740
 - American College of Rheumatology data set, 741-743
 - disease activity score, 742-743
 - fatigue measurement, 737
 - functional, 726, 738-739
 - global, 726, 738-739
 - joint counts, 726-728, 739
 - laboratory tests, 726, 729-730, 739
 - Lansbury systemic manifestations, 740-741
 - pain measurement, 736-737
 - patient only index, 742-744
 - Paulus criteria, 741-742
 - physical examination, 726
 - questionnaires, 726, 730-736, 739-740, 744-746
 - radiography, 726, 728-729, 738-739
 - simplified disease activity index, 742-743

- standard protocol for, 744, 746
- Steinbrocker therapeutic scorecard, 740-741
- complement in, 12-13
- cytokines in, 40-46
- databases for, **769-781**
 - American Rheumatism Association Medical Information System, 770-771
 - Central Finland Rheumatoid Arthritis Database, 775
 - German Regional Collaborative Arthritis Centers, 774-775
 - Italian, 777
 - Nashville, Tennessee, 772-773
 - Oslo Rheumatoid Arthritis Registry, 773-774
 - Spanish, 776-777
 - Standard Diagnosis Registry of Rheumatic Diseases, 773
 - Swedish registry of biologic agents and leflunomide, 776
 - uniform, 777
 - Wichita Database and National Data Bank, 771-772
- familial aggregation of, 214
- genetic factors in, 215, 859-860
- HLAs in, 223-224
- juvenile. *See* Juvenile chronic arthritis/ juvenile rheumatoid arthritis.
- malignancy and. *See* Cancer.
- medical record data on, in Rochester Epidemiology Project, 821-831
- monocyte-derived dendritic cells in, 123-127
- mortality in, 857
- pathogenesis of, 363-364
 - interleukin-6 in, 406-407
 - interleukin-18 in, **415-432**
- population studies of, 861-862
- prospective cohort studies on, 800, 804, 806
- T lymphocytes in, 149
- treatment of. *See also* specific drugs.
 - adalimumab in. *See* Adalimumab.
 - anakinra in. *See* Anakinra.
 - angiogenesis inhibitors in, 108
 - assessment of
 - quantitative measures and indices for, **725-751**
 - radiology in, **285-292**
 - B-lymphocyte considerations in, 170, **391-401**
 - clinical trials and care in. *See* Rheumatoid arthritis, clinical trials and clinical care in.
 - costimulatory molecules in, 186
 - cytotoxic T-lymphocyte antigen 4-immunoglobulin in, **379-389**

- databases on, 741-743,
769-781, 860
 etanercept in. *See* Etanercept.
 high-mobility group box
 chromosomal protein 1
 (HMGB1) inhibitors in,
625-635
 infliximab in. *See* Infliximab.
 interleukin-6 inhibitors in,
403-413
 interleukin-18 inhibitors in,
415-432
 leflunomide in. *See* Leflunomide.
 malignancy due to, 274-276
 methotrexate in. *See* Methotrexate.
 radiologic efficacy of. *See*
 Radiology, in rheumatoid
 arthritis treatment evaluation.
 safety of, **237-255**. *See also*
 Tuberculosis, risk of, from
 rheumatoid arthritis therapy.
 adalimumab, 242-252,
 356-359
 anakinra, 242-252, 369-372
 cytokine inhibitors, 242-252
 infliximab, 242-252,
 339-342
 leflunomide, 239-241
 twin concordance in, 215
- Rheumatoid factor
 cells producing, activation of, chromatin-
 containing immune complexes in,
 560-564
 in rheumatoid arthritis assessment, 730
- Rituximab, for rheumatoid arthritis, **391-401**
 aim of, 391-393
 immunodynamic studies of, 399-400
 immunosuppression evidence in,
 396-397
 indications for, 398
 infusion reactions from, 397-398
 justification for, 396
 length of benefit of, 396
 malignancy due to, 398
 mechanics of, 393-394
 practical experience with, 394
 protocols for, 394-395
 seronegative, resistance of, 395
- Rochester Epidemiology Project, **819-834**
 bias minimization in, 827-829
 conditions inadequately captured in
 health care system in, 825
 contemporary diagnostic criteria applied
 in, 822
 cost-of-illness studies in, 830
 costs of, 830
 delayed effects in, 824-825
 encounter-specific data in, 821
 genetic, 825-826
 history of, 819-821
 indexing system of, 820
 information on confounding factors
 in, 826
 infrastructure for prospective studies
 in, 826-827
 longitudinal medical histories in,
 823-824
 long-term outcomes in, 824-825
 original medical record access in, 821
 reassessment of original slides,
 radiographs, and specimens in, 824
 representativeness of county population
 in, 829-830
 secular trend analysis in, 822-823
 subject protection in, 831
 unique study designs and analysis in,
 830-831
- Rofecoxib, safety of, 840-841
-
- S**
- S19 ribosomal protein dimer, in apoptosis
 regulation, 510
- Safety, drug
 in rheumatoid arthritis. *See* Rheumatoid
 arthritis, treatment of, safety of.
 pharmacoepidemiologic studies of,
 838-843
- Scleroderma autoantigen (CENP-C), cleavage
 of, in apoptosis, 463
- Secular trends, analysis of, in Rochester
 Epidemiology Project, 822-823
- Selectins
 in angiogenesis, 106
 in leukocyte-endothelial interactions,
 100-101
 in phagocytosis, 20-21
- Senescence, of T lymphocytes, 153-154
- Sentrin-1/SUMO-1, in apoptosis, in
 rheumatoid arthritis, 615
- Sepsis, high-mobility group box chromosomal
 protein 1 (HMGB1) in, 627-628
- SF-36 questionnaire, for rheumatoid arthritis
 assessment, 730
- Sharp method, for rheumatoid arthritis
 radiographic assessment, 728-729
- Silicone breast implants, rheumatic disease in,
 prospective cohort studies on, 803-804
- Simplified disease activity index, for
 rheumatoid arthritis assessment,
 742-743

- Sjögren's syndrome, medical record data on, in Rochester Epidemiology Project, 821, 830
- Skin, inflammation of, lipoxin in, 81
- SLE. *See* Systemic lupus erythematosus.
- Soluble interleukin-18 receptor, 423-424
- SPERA (standard protocol to evaluate rheumatoid arthritis), 744, 746
- Spondyloarthropathies
cytokines in, 46
familial aggregation of, 213-214
HLA-B27 in, 222
- SSA/Ro autoantibodies, in congenital heart block. *See* Congenital heart block.
- SSB/La autoantibodies, in congenital heart block. *See* Congenital heart block.
- Standard Diagnosis Registry of Rheumatic Diseases, 773
- Standard gamble technique, in health services instruments, 884-885
- Standardization, in observational research, 689
- STAT3, in apoptosis, in rheumatoid arthritis, 614-615
- Statins, beneficial effects of, 844
- Steinbrocker therapeutic scorecard, for rheumatoid arthritis assessment, 740-741
- Step-down design, for rheumatoid arthritis clinical trials, 704-705
- Step-up design, for rheumatoid arthritis clinical trials, 704
- Still's disease, cytokines in, 46-47
- Stratification, in observational research, 689
- Stromal cell-derived factor 1, in rheumatoid arthritis, 607
- Sulfasalazine
for rheumatoid arthritis, 606, 703-705, 709
safety of, in pregnancy, 841
- SUMO-1, in apoptosis, in rheumatoid arthritis, 615
- Surfactant proteins, in apoptotic cell clearance, 479
- Surveillance bias, minimization of, in Rochester Epidemiology Project, 828
- Survival bias, minimization of, in Rochester Epidemiology Project, 827-828
- Swedish registry of biologic agents and leflunomide, 776
- Synoviin/Hrd1, in apoptosis, in rheumatoid arthritis, 615
- Synovitis
chronic, 44
initiation of, 40-41
perpetuation of, 41-44
remitting seronegative symmetric, with pitting edema, versus rheumatoid arthritis, 276-277
- Systemic lupus erythematosus
apoptosis in, **505-526, 527-555**
abnormal cell clearance in, 493-499
animal models of, 513-514
antigen formation in, 494-495, 527-528, 533-536
B lymphocytes and, 516-517, 519-521
balance of, 528-531
cell clearance and, 481-482, 494-499, 531-533
DNA release in, **573-585**
genetic factors in, 517-518
germinal centers and, 512, 518-521
in kidney, 668
mechanisms of, 507-511
nephritis and, 543-546
nucleosome-specific antibodies in, 537-546
phagocytosis in, 507-513
rate of, 514
secondary necrotic cell accumulation in, 515
T lymphocytes and, 514-515, 536-537
versus necrosis, 506-507
versus normal clearance mechanisms, 488-494
B lymphocyte function in, 168-169
complement deficiencies in, 7-9
cytokines in, 47-52
dendritic cell cross-priming in, 125-126
familial aggregation of, 213-215
immune complexes in, Toll-like receptor interactions with, 564
in pregnancy, congenital heart block. *See* Congenital heart block.
medical record data on, in Rochester Epidemiology Project, 821, 825, 830
necrosis in, cell clearance in, 494-496
prospective cohort studies on, 800, 804, 807

- treatment of
 - B lymphocyte considerations
 - in, 168
 - complement-related, 11-12
 - costimulatory molecules in, 186
- Systemic sclerosis
 - cytokines in, 52-53
 - versus number of children, 861
- Systemic vasculitis, farming exposure and, 693

T

- T lymphocytes, 135-157
 - activation of, 143-146
 - apoptosis of, resistance to, in rheumatoid arthritis, 607-609
 - autoimmunity and, 150-153, 224-227, 458-460
 - costimulatory molecule interactions with.
See Costimulatory molecules.
 - cytotoxic, 148-149
 - antigen 4-immunoglobulin, for rheumatoid arthritis, 379-389
 - in apoptosis, 661
 - in autoantigen structural alterations, 461-464
 - development of, 139-141
 - helper, 146-148
 - in antigen recognition, 136-138
 - in rheumatoid arthritis, 41-44
 - in systemic lupus erythematosus, 51, 516, 536-537
 - in tuberculosis, 259-260
 - innate immunity and, 141-143
 - lineage commitment of, 139-141
 - memory, 149-150
 - receptors for. See T-cell receptor.
 - regulation of, 143-146
 - regulatory, 152
 - self-recognition by, 219
 - senescence of, 153-154
 - subsets of, autoimmune disease and, 224-227
 - suppressor, 152
 - tolerance and, 150-153, 514-515
 - types of, 135-136
- T-cell receptor
 - diversity of, 138
 - function of, 136-138
 - self-recognition by, 219
 - structure of, 138
- Teratogens, 841-842
- Terminal deoxynucleotidyl transferase-mediated dUTP-biotin nick end-labeling (TUNEL), in apoptosis detection, 657-658
 - in congenital heart block, 592
 - in rheumatoid arthritis, 603-604
- Thrombocytopenia, immune, rituximab for, 398
- Thrombospondin-1, in apoptosis, in congenital heart block, 595
- Thymus, apoptotic cell clearance in, 512
- Time trade off technique, in health services instruments, 884-885
- TNFR (tumor necrosis factor- α receptor, in apoptosis, in rheumatoid arthritis), 610-611
- TNFR1-associated DD protein (TRADD), in apoptosis, in rheumatoid arthritis, 610
- TNFR-associated factors (TRAFs), in apoptosis, in rheumatoid arthritis, 610
- Tolerance
 - B lymphocytes in, 162-164
 - induction of, in apoptosis, 456
 - peripheral, in apoptosis, 203-204
 - T-lymphocyte dependent, 150-153
- Tolerogenic dendritic cells, 123-124
- Toll-like receptors
 - HMGB1 interactions with, 628
 - in immune regulation, 493-494
 - in phagocytosis, 31
 - nuclear antigen stimulation of, 557-572
 - AM14B cells, 562-563
 - apoptosis and, 564-567
 - autoantigens in, 557-558
 - bacterial DNA, 558
 - dsDNA fragments, 563-564
 - immune complexes and, 560-562, 564
 - in lupus sera, 564
 - ligands recognized by, 558-559
 - rheumatoid factor-producing B cells and, 559-562
 - therapeutic agents based on, 567
 - of dendritic cells, 121
 - T lymphocyte function and, 142-143
- TRADD (TNFR1-associated DD protein), in apoptosis, in rheumatoid arthritis, 610
- TRAFs (TNFR-associated factors), in apoptosis, in rheumatoid arthritis, 610
- TRAIL and TRAIL receptors, in apoptosis, in rheumatoid arthritis, 608-609, 613-614
- TRANCE, in rheumatoid arthritis, 149
- Transforming growth factor- β
 - in apoptosis, 478, 595-596
 - in inflammatory myopathies, 54
 - in systemic sclerosis, 52-53
- Transglutaminase 2, in apoptotic cell clearance, 478

- Transglutamination, in apoptosis, in autoantigen structural alterations, 466
- Tuberculosis, risk of, from rheumatoid arthritis therapy, 257-270
 adalimumab, 357-359
 anakinra, 267
 cytokine inhibitors, 245-247
 epidemiology and, 257-258
 etanercept, 322
 immune defense and, 258-260
 infliximab, 339-340
 screening in, 263, 265-266
 treatment of positive cases, 266-267
 tumor necrosis factor inhibitors, 260-263
- Tumor necrosis factor and tumor necrosis factor receptor family, 176, 182-184
 etanercept as. *See* Etanercept.
 inhibitors of
 infliximab as. *See* Infliximab.
 safety of, 843
 tuberculosis risk from, 260-263
- Tumor necrosis factor- α
 antibodies to, for rheumatoid arthritis, 606-607, 625-626
 in apoptosis, 660-661
 in clearance, 477-478
 in osteoarthritis, 643-644
 in rheumatoid arthritis, 610-612, 614
 in dendritic cell development, 118-119
 in inflammatory myopathies, 53-54
 in phagocytosis, 31-35
 in rheumatoid arthritis, 41-45
 in systemic lupus erythematosus, 47-52
- Tumor necrosis factor- α receptor, in apoptosis, in rheumatoid arthritis, 610-611
- Tumor necrosis factor-related apoptosis-inducing ligand, in systemic lupus erythematosus, 49
- Twin concordance, in autoimmune disease, 215

U

- Uric acid, in apoptosis regulation, 510

V

- Vaccine, Lyme disease, safety of, 843
- van der Heijde modification, of Sharp score, for rheumatoid arthritis radiographic assessment, 729
- Vascular cell adhesion molecule-1, in leukocyte-endothelial interactions, 101
- Vascular endothelial cells. *See* Endothelial cells, vascular.
- Vascular endothelial growth factor
 glomerulonephritis and, 662-663, 669-670
 in angiogenesis, 104
- Vasculitis
 cytokines in, 54-56
 systemic, farming exposure and, 693
- Vasodilatation, in inflammation, 98-99
- Viral infections, autoimmunity in, 535-536
- Visual analog scale
 for rheumatoid arthritis, 737
 in health services instruments, 884-885
- Volunteer bias, minimization of, in Rochester Epidemiology Project, 828

W

- Walk time, in rheumatoid arthritis assessment, 738
- Wegener's granulomatosis
 cytokines in, 55-56
 etanercept for, 321
- Western Ontario and McMaster Universities arthritis index, for rheumatoid arthritis assessment, 730, 737
- Wichita Database and National Data Bank, 771-772
- Wiskott-Aldrich protein, in apoptotic cell clearance, 474
- Women's Health Study, 800, 807-808

Z

- ZAP-70, in apoptosis, in rheumatoid arthritis, 609



